

What is claimed is:

1. A crystal oscillator for surface mounting,
comprising:

a crystal unit;

a mounting substrate on which an IC chip is mounted
5 and which is bonded to a rear surface of said crystal unit;
and

an electronic component which is mounted on one end
of a surface of said mounting substrate on which said
crystal unit is bonded;

10 wherein said crystal unit comprises:

a planar substrate;

a crystal blank secured to one principal surface of
said planar substrate;

a metal film formed along an outer periphery
15 surrounding said principal surface; and

a concave metal cover having an open-ended face;

wherein said open-ended face is bonded to said metal
film by brazing to hermetically seal said crystal blank
between said metal cover and said planar substrate.

2. The crystal oscillator according to claim 1,
wherein first connection terminals for electrically
connecting with said crystal blank are formed on the other
principal surface of said planar substrate, and said first

5 connection terminals are electrically connected to second connection terminals formed on the surface of said mounting substrate upon which said crystal unit is bonded.

3. The crystal oscillator according to claim 1, wherein said planar substrate is composed of laminated ceramic.

4. The crystal oscillator according to claim 3, wherein said first connection terminals are electrically connected to said crystal blank by way of through-holes formed in said laminated ceramic and a conductive adhesive.

5. The crystal oscillator according to claim 1, wherein planar outer dimensions of said metal cover is smaller than planar outer dimensions of said planar substrate, and a thickness of said metal cover at said
5 open-ended face is smaller than a width of said metal film.

6. The crystal oscillator according to claim 1, wherein said metal cover has a continuously increasing thickness toward an outer periphery on said open end face.

7. The crystal oscillator according to claim 1, wherein said planar substrate has a planar outer form which is substantially rectangular.

8. The crystal oscillator according to claim 7,
wherein said metal cover has a substantially rectangular
bottom wall and side walls extending substantially
perpendicular to, said bottom wall, said side walls thus
5 forming said open-ended face.

9. The crystal oscillator according to claim 1,
wherein a depression is formed on a surface of said
mounting substrate which is opposite the surface on which
said crystal unit is bonded, and an IC chip is mounted
5 inside said depression.

10. The crystal oscillator according to claim 1,
wherein said IC chip includes an oscillation circuit
electrically connected to said crystal unit.

11. The crystal oscillator according to claim 1,
wherein said electronic component is a chip capacitor.